AT–356

B.Sc. Part—II Semester–IV Examination

BOTANY

(Cell Biology, Genetics & Biochemistry)

Time : Three Hours] [Maximum Marks : 80

Note :— (1) There are **SEVEN** questions in all.

(2) Question No. 1 is compulsory and carries 8 marks.

(3) Question Nos. 2 to 7 carry equal marks.

(4) Draw well labelled diagrams wherever necessary.

1. (A) Fill in the blanks :

(i) A cell with a true membrane-bound nucleus is called _____. ½

(ii) Protein part of enzyme is known as _____. ½

(iii) _____ is the cell organelle of photosynthesis in plant cell. ½

(iv) Mendel performed experiments on _____ plant. ½

(B) Choose the correct alternative (MCQs) : ½

(v) Mendel's law of purity of gametes is _____ .

(a) Law of dominance

(b) Law of segregation

(c) Law of independent assortment

(d) Incomplete dominance.

(vi) _____ are the specialized proteins which act as catalysts in bio chemical reaction. ½

(a) Lipids (b) Proteins

(c) Enzymes (d) Nucleic acids

(vii) The plasma membrane is made up of a _____ bilayer. ½

(a) Phospholipid (b) Phosphoprotein

(c) Glycoproteins (d) All of these

(viii) The aneuploid condition 2n-2 is called _____ . ½

(a) monosomic (b) trisomic

(c) nullisomic (d) All of these

(C) Answer in one sentence each :

(ix) Define phenotype 1

(x) What is monohybrid cross ? 1

(xi) What is Euploidy ? 1

(xii) What are extranuclear genomes ? 1

2. Explain :

(a) Functions of plasma membrane 4

(b) Eukaryotic cell 4

(c) Nucleolus 4

OR

(d) Functions of cell wall 4

(e) Structure of chloroplast 4

(f) Functions of nucleus 4

3. Comment on :

(a) Metaphase of mitosis 4

(b) Peroxisomes 4

(c) Functions of Golgi complex 4

OR

(d) Structure of Ribosomes 4

(e) Significance of meiosis 4

(f) Function of mitochondria 4

4. Explain :

(a) Euploidy 6

(b) Deletions and Inversion 6

OR

(c) Trisomy and tetrasomy 6

(d) Structure and morphology of chromosome. 6

5. (a) Law of independent assortment 6

(b) Supplementary Factor. 6

OR

(c) In sweet pea, the genes C and P when come together produce purple flowers. But when either C or P is present alone, it produces white flowers. What flower colours and their proportions will be produced in the following crosses ? 12

(i) CCPp × ccPp

(ii) CcPp × ccPP

(iii) Ccpp × ccPp

(iv) ccPP × CCpp

6. Write on :

(a) Incomplete Linkage 4

(b) Physical mutagens 4

(c) Chloroplast DNA. 4

OR

(d) Transition and Transversion mutation 4

(e) Mechanism of crossing over 4

(f) Mitochondrial DNA. 4

7. Comment on :

(a) Structure of monosaccharides 4

(b) Co-enzymes and cofactors 4

(c) Hydrolases. 4

OR

(d) Induce fit model of enzyme action 4

(e) Functions of polysaccharide 4

(f) Oxido-reductase. 4